THE ETIOLOGY AND TREATMENT OF VENEREAL BUBOES.

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So much has been written on this subject, and so many able observers have published results of their investigations, that it is with hesitancy that I commence this article; still, I think the causation and comparative treatment of bubo are of sufficient interest to warrant the placing of another paper on this subject before the profession.

As the small indolent buboes following chancre are not a complication, but an evidence of systemic infection, and rarely suppurate or cause any inconvenience, they will not be considered in this article.

Lymphadenitis is a somewhat rare complication of gonorrhœa, and when it occurs is probably due to the absorption of chemic poisons, the result of a mixed infection. The frequency of gonorrhœal buboes is shown by the following statistics compiled from the reports of the U. S. Marine-Hospital Service:

Table I.

Cases of gonorrhœa	13,774
Number of buboes occurring in these cases . . .	341
Percentage of buboes to total number of cases of gonorrhœa	2.48

Armstrong[1] states that these complications occur in 2.7 per cent. of cases of specific urethritis. My individual records show a percentage of 2.8.

This brings us to the consideration of the cause of the majority of buboes, and, since the soft chancre is this exciting factor, a few words concerning its etiology will be appropriate in this connection.

It is a mooted point whether a chancroid is due to a specific germ; some careful observers claim it is, while other equally prominent investigators say it is not.

Ducrey[2] states that he has found a microbe that is constantly present in chancroidal pus, which he believes to be the exciting cause of chancroid. He describes the germ as being a rod-like bacillus, occurring singly and in chains; when in the tissues almost always in chain-form. His observations are confirmed by Unna, Krefting, and others.

The crucial test of the propagation of pure cultures that would cause the disease has failed. These gentlemen have claimed to have propagated the specific germ on the patient himself for five or six generations, and to have finally gotten pure cultures. On the other hand, many eminent men deny that chancroid is due to a specific germ, and Finger[1] says that if this strepto-bacillus is the exciting cause, it is nothing more than a pyogenic microbe.

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[1] Medical News, December 5, 1885.

[2] Comptes Rendus du Congrès Internat. de Derm. et de Syph., Paris, 1889, p. 229.

Taylor[2] claims that the soft chancre is not due to a special virus, and says that it may be produced by simple pus, pus from irritated syphilitic lesions, and believes that this disease can originate *de novo*.

We all know that bubo is a frequent complication of chancroid, and that it may follow the most insignificant lesions, while it is often absent when the destructive process is most active. In fact, there is no relation between their frequency and the clinical features of the ulcers.

There is no particular time for a bubo to develop; it may occur at any time during the course of the chancroid or some time after it has healed; hence all cases attributed to strain, etc., should be looked upon with suspicion, as a rigid examination will generally trace them back to an antecedent chancroid. I have had several cases under my care in which the bubo developed after the ulcer of the penis had completely cicatrized.

The frequency of this complication is shown by the following statistics: Sturgis[3] states that in 249 soft chancres bubo occurred in 71, a percentage of 28.5. Ricord's statistics, as quoted by Sturgis, give the frequency of bubo as 31 per cent. Szadex[4] reports 1084 cases, among which were 274 buboes, or about one bubo in four chancroids. Martin[5] says that the record of his venereal service shows that this complication occurred in 19 per cent. of 162 chancroids, but that these were cases that applied to hospitals for treatment, and that among the higher classes who observe hygienic laws, and apply early for treatment, bubo will not occur in more than 5 per cent. of all cases of chancroids treated.

Buboes are more often single, developing on the side corresponding to the lesion, but may be on the opposite side. When double, they are generally due to the chancroid involving the frænum. Of Sturgis's 71 cases of buboes, 54 were single and 17 double. My records of 36 buboes show that 27 were single and 9 double.

The most marked predisposing causes of bubo are irritation of the chancroid, either by bodily activity or by the use of escharotics that are not sufficiently strong to destroy thoroughly all the diseased tissue, but capable of exciting an inflammatory reaction; lack of cleanliness; and retention of discharge by allowing the ulcer to scab over.

As the terminal vessels of the lymphatics open directly on the ulcerating surface of the lesion, we naturally suppose the exciting cause of bubo to be the absorption of some virulent material. The theory most commonly accepted, until recent years, was that this exciting factor was the absorption of micro-organisms from the chancroid, which while traversing the lymphatic vessels produced little disturbance, but when arrested by the glands excited by their irritant action on the tissues an inflammation generally ending in suppuration. The theory just given has been shown to be incorrect by the results of bacteriological research, as repeated microscopical examinations of the contents of buboes have demonstrated the absence of any micro-organisms, and autoinoculation with the pus, antiseptically withdrawn, has invariably failed to produce the typical ulceration. Strauss examined the pus from forty buboes and failed to find any micro-organisms, and autoinoculation with this pus was unsuccessful, while control-experiments of inoculation with the secretion of the chancroid caused the characteristic sore. These results have been verified by Spitschka.

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[1] Annales de Derm. et Syph., 1895.

[2] Venereal Diseases, 1895, p. 485.

[3] International Encyclopædia of Surgery, vol. ii. p. 436.

[4] Vierteljschr. f. Derm. und Syph., 1888, Heft 2, p. 209.

[5] System of Genito-urinary Surgery, etc., vol. ii. p. 870.

Therefore the evidence leads us to believe that the true exciting cause of bubo is the absorption of poisonous substances, toxins or ptomaïnes, resulting from the action of the germs in the chancroidal lesion, and is not due to the entrance of the micro-organisms themselves into the lymphatics. Whether these chemical substances are the products of a specific microbe or of ordinary pyogenic germs is a question that is still undecided, but it is probably the latter.

TREATMENT. The treatment of buboes depends upon the stage at which they are seen, and, consequently, is divided into two classes: that of non-suppurating buboes and that of suppurating buboes. But before taking up their treatment in detail, the insertion of the following tables, showing the relative frequency of the two kinds, will be advisable.

These statistics were obtained by correspondence with officers of the U. S. Marine-Hospital Service, and represent transcripts of the records of several stations. They are intended to show the frequency of the two varieties presenting for treatment, and not the number of inflamed lymph-glands of the groin that will eventually suppurate, as pus forms in nearly all buboes that are left alone; the percentage of those disappearing without suppuration being very small:

TABLE II.

Total number of buboes	970
Suppurating buboes	416
Non-suppurating buboes	554
Percentage of suppurating buboes to total number of buboes	42.88

TABLE III.—CASES TREATED IN DISPENSARY.

Total number of buboes	521
Suppurating buboes	232
Non-suppurating buboes	289
Percentage of suppurating buboes to total number of buboes	44.52

TABLE IV.—CASES TREATED IN HOSPITALS.

Total number of buboes	449
Suppurating buboes	184
Non-suppurating buboes	265
Percentage of suppurating buboes to total number of buboes	40.97

The following table (No. V.) is taken from Sturgis's article on "Chancroid" in the *International Encyclopædia of Surgery:*

TABLE V.

Total number of buboes	71
Suppurating buboes	30
Non-suppurating buboes	41
Percentage of suppurating buboes to total number of buboes	42.2

After this brief digression the treatment of non-suppurating buboes will now be considered. The treatment of this variety may be (1) by external applications; (2) by the hypodermatic injection of medicinal agents into the substance of the gland; (3) by incision; and (4) by excision.

External applications are employed in the first stage as abortive measures, and later, when suppuration is threatened, to hasten the formation of pus. Tincture of iodine painted around the inflamed gland is the remedy most extensively used to abort buboes. My experience with this drug is that it is of no value in the treatment of this disease, and I have yet to see a bubo benefited by its use. This opinion is confirmed by several surgeons to whom I have written; and Martin says that the external application of iodine is valueless. Auspitz and Szadex are of the same opinion regarding its uselessness.

The most important means to employ when a bubo is seen early and it is decided to try abortive measures, are rest in bed, use of belladonna-ointment, and pressure applied by means of a spica on the groin. In a very few cases these measures will cause a disappearance of the inflammatory symptoms. I have long since given up the treatment just described on account of it being unreliable and unsatisfactory, and now treat all buboes seen before suppuration by another method.

Injection. Several antiseptic substances, injected into the inflamed gland, have been used as a means of aborting buboes. Dr. M. K. Taylor[1] several years ago called the attention of the profession to his method of treating buboes by the injection of a solution of carbolic acid. He claims that one injection generally succeeds in aborting a bubo; that suppuration is rare; and a cure is effected in eight to ten days. He uses a solution of ten grains to the ounce, and injects twenty to forty minims.

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[1] AMERICAN JOURNAL OF THE MEDICAL SCIENCES, April, 1882.

Harvey[1] also speaks of the efficacy of this treatment, and says that the time of election for the injection is just prior to suppuration. Others have tried the use of carbolic acid, but were disappointed with the results obtained, and at the present time this agent is seldom employed.

A 1 per cent. solution of bichloride of mercury has also been highly lauded as an efficient remedy in this class of cases. Nannino[2] reported twenty-seven buboes successfully treated by injecting this drug. I have treated five cases by this method, in all of which there was intense pain produced by the medication that lasted for hours; in one case there was severe constitutional disturbance, the febrile symptoms lasting six days; and all went on to the formation of an abscess, necessitating an incision. The average duration of treatment in these cases was seventeen days. I soon discontinued the use of it on account of the severe pain it produced.

The injection treatment that I now wish to consider is the use of a 1 per cent. solution of benzoate of mercury, the action of which is far more successful than that of carbolic acid or bichloride of mercury, and is one that yields satisfactory results in the majority of cases.

Dr. Welander,[3] who first called attention to the marked influence of this drug in the treatment of buboes, reports some extraordinary results, and says that in the majority of non-suppurating cases it will cause a subsidence of the inflammatory symptoms in a few days, and that resolution will be prompt. Of 78 cases reported by him, 56 were cured without any suppuration; but in the remaining number some pus formed in the centre of the gland, necessitating a puncture. Spitschka confirms the results of Welander. Brousse and Botherat[4] reported 10 cases treated by this method, 9 of which suppurated.

My experience with the benzoate of mercury has been so satisfactory that I employ it in the treatment of all non-suppurating buboes; and also in those in which the formation of pus is suspected, but distinct fluctuation is absent. In fact, my experience teaches that it acts most beneficially in buboes in which suppuration is threatened.

The injection should be made under the same aseptic conditions as when a surgical operation is contemplated. I generally inject 20 or 30 minims with a hypodermatic syringe, passing the needle well into the substance of the gland, and entering it at one or more points.

The medication causes a burning pain, which usually lasts about two hours, and some constitutional disturbance; fever ranging from 99° to 104°, and continuing for a few days. In some cases there is a rise in temperature only after the first injection, while in others there is an elevation after each use of the drug. The shortest period of fever recorded was one day, the longest six days, and the average time was three days.

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[1] Medical News, January 23, 1886.

[2] Wiener medizinische Presse, No. 47, 1887.

[3] Archiv für Dermat. und Syph., Heft 3, 1891.

[4] Ann. de Dermat. et Syph., April, 1893.

In two or three days after the commencement of treatment the bubo is much diminished in size and resolution is taking place. In all of my cases some pus, generally small in amount, formed in the centre of the inflamed gland, but at the same time resolution was taking place in the periphery. As soon as any suppuration is detected a small puncture is made, all the pus squeezed out, the small abscess-cavity irrigated with peroxide of hydrogen, and an antiseptic dressing applied. In a few days all discharge ceases, the remaining induration rapidly subsides, and the bubo is cured.

The following table of 22 cases of unselected buboes from my own practice will show the time necessary to effect a cure by this plan of treatment:

TABLE VI.—INJECTION OF 1 PER CENT. SOLUTION BENZOATE OF MERCURY IN NON-SUPPURATING BUBOES.

Case.	Number of injections.	Total amount injected.	Time necessary to effect a cure.	Remarks.
1	2	40 min.	9 days.	
2	2	40 "	10 "	
3	3	60 "	26 "	Very large bubo.
4	3	70 "	12 "	
5	4	100 "	22 "	
6	2	60 "	20 "	
7	2	50 "	13 "	
8	2	60 "	25 "	
9	1	30 "	5 "	About to suppurate.
10	1	30 "	15 "	
11	2	60 "	13 "	
12	1	30 "	7 "	
13	2	60 "	10 "	
14	2	40 "	10 "	
15	2	40 "	10 "	
16	1	25 "	8 "	
17	3	60 "	24 "	
18	2	60 "	14 "	
19	2	40 "	13 "	
20	3	60 "	13 "	
21	2	40 "	13 "	
22	2	40 "	14 "	

Total number of cases	22
Total number days of treatment	306
Average time in days necessary to effect a cure	13.90

I consider this treatment far superior in the majority of buboes to excision of the inflamed glands; since the operation is a trivial one, there is no danger of an accident and no need of an anæsthetic; the scar is scarcely noticeable; and the time necessary to effect a cure is much shorter. On the other hand, the excision of a large bubo is not a simple operation; it leaves a large cavity that, in the vast majority of cases, must heal by granulation, weeks being consumed before cicatrization, and finally a large and unsightly scar is left to remind the patient that he was unfortunate in some of his battles with Venus. Again, discarding everything in this comparison except the element of time, and weighing the most favorable statistics I have seen on excision, that of union by first intention in one-half of the cases, still the scales tip in favor of the benzoate treatment.

Dr. Woodward[1] advocates an early incision in non-suppurating buboes. After the skin has been made aseptic he makes an incision, running parallel to the groin, deep into the gland. After the hemorrhage is arrested, the wound is packed with iodoform-gauze and a sublimate dressing applied. He claims that the inflammatory symptoms soon subside, and that the patient is well at the end of one or two weeks. I have been able to collect only four cases treated in this way, the average time of which was twenty-two days.

Excision. In recent years excision has become the favorite method of many surgeons for treating non-suppurating buboes, but the results obtained have been so unsatisfactory that several who formerly excised all inflamed glands have abandoned the operation and treat by external application until pus forms, when the bubo is incised and treated as an ordinary abscess.

Excision of all implicated glands means a difficult and somewhat hazardous operation in a dangerous anatomical region. Accidents have happened in the hands of the most skilful operators; the most serious are wounds of the femoral and internal saphenous veins. The hemorrhage is often profuse, and complete enucleation of all of the diseased glands leaves a cavity that seldom heals before considerable time has elapsed.

Dr. Watson believes in thorough excision, and reports 20 unselected cases, in 10 of which he secured union by first intention. His statistics are the most favorable I have seen, and probably few other surgeons have been as successful.

The following table, representing statistics obtained from the records of surgical operations of several U. S. Marine Hospitals, will, I believe, represent the average time necessary to effect a cure by this method:

TABLE VII.

Total number of non-suppurating buboes excised	96
Total number of days of treatment	3241
Average time in days necessary to effect a cure	33.76

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[1] U. S. Marine-Hospital Report, 1892.

The shortest time was eight days, the longest seventy-eight days. In several there was union by first intention, and the patients were discharged cured in eleven or fourteen days.

Martin says that the time consumed will be from two to eight weeks, depending upon the size of the bubo excised.

The treatment of suppurating buboes may be (1) by incision and treating as ordinary abscess; (2) by incision and curettement; (3) by puncture, evacuation of pus, and distention of the cavity with medicinal substances; and (4) by thorough excision of all diseased glands.

The treatment by incision alone has not yet yielded very brilliant results, the average number of days consumed being shown by the table given below:

TABLE VIII.

Total number of buboes treated by incision	41
Total number of days of treatment	1313
Average duration of treatment in days	32

Incision and curettement have not given much better results than simple incision. It is true, though, that the cases in which curettement is used are generally more severe, and, consequently, the results would make a more favorable showing if it were used in all suppurating buboes.

These statistics of several cases will give an idea of the comparative treatment:

TABLE IX.

Total number buboes treated by incision and curettement	18
Total number of days of treatment	591
Average duration of treatment in days	32.8

This treatment is advisable in those cases in which the skin has been destroyed and there is left an unhealthy granulating ulcer.

Karl Szadex[1] reported 274 cases of suppurating buboes treated by incision, curetting, and packing with iodoform-gauze. The average duration of treatment was thirty days.

In speaking of the treatment of this class of buboes by incision and distention of the cavity with medicinal substances, I wish to call attention to only one method, that of Scott Helms[2] and Dr. Hayden's modification of it. This treatment is applicable to all freely suppurating buboes, and should be used in preference to any other.

Dr. Scott Helms removed the pus by aspiration, then injected the cavity with a solution of carbolic acid, and after this was thoroughly squeezed out the abscess-cavity was distended with a 10 per cent. iodoform-ointment.

Fontan[3] also described this treatment with iodoform and vaseline, and reported 41 cases. The average time of treatment was six or seven days.

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[1] Journal of Cutaneous and Genito-urinary Diseases, September, 1883.

[2] Chicago Medical Journal and Examiner, September, 1886.

[3] Espieux: Thèses de Montpellier, April, 1889.

Dr. Otis[1] reported 16 buboes treated by this method, and of his cases, 9 were cured in six days, 1 in fourteen, and 1 in twenty-three days. He says that iodol is as good as iodoform, without the objectionable odor.

Dr. Hayden[2] described his treatment as follows: make a small puncture through the skin at the most fluctuating point of the bubo; thoroughly evacuate the pus; irrigate the cavity with peroxide of hydrogen, then with bichloride solution, 1 to 1000; press out all the fluid; distend the cavity with warm vaseline holding in suspension 10 per cent. of iodoform; and apply a cold bichloride dressing to favor congealment.

The patient should be kept quiet for forty-eight hours, and the dressings removed on the third or fourth day; if no pus has formed, another injection of iodoform-ointment is not necessary; but if the suppuration has not entirely ceased, the bubo should be redressed in the original manner. He reported 15 cases, in which the average duration of treatment was twelve days, and in 12 one injection was sufficient.

Dr. Robert Taylor also advocates this treatment, and says the majority of suppurating buboes can be cured by this method in from ten to twenty-one days.

Dr. Hayden's method has given me the most satisfactory results, and I apply this method of treatment to all freely suppurating buboes. My record of 7 cases shows that 5 were cured by one injection, and that the average time of treatment was thirteen and one-half days. The pain and other inflammatory symptoms soon disappear, and the patient quickly recovers with a scar that is insignificant. I cannot too heartily indorse this treatment, and I believe it will yield satisfactory results to all those who may give it a trial. Of course, there are a certain number of cases in which it is not applicable, and in which it will be necessary to use the curette or excise all the diseased glands.

In speaking of the treatment of non-suppurating buboes by excision, I tried to prove that it did not yield satisfactory results, and the same objections to the operation there noted hold equally good when this method is employed in the treatment of suppurating buboes. As mentioned above, there are some few cases in which thorough excision of all diseased tissue will yield the best results; but they are few as compared with the total number.

The following table will show the results of this operation in a number of cases:

TABLE X.

Total number of suppurating buboes treated by excision .	25
Total number of days of treatment	989
Average duration of treatment in days	39 5

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[1] Journal of Cutaneous and Genito-urinary Diseases, May, 1893.

[2] AMERICAN JOURNAL OF THE MEDICAL SCIENCES, November, 1895.

Tables VIII., IX., and X. were compiled from the reports of surgical operations of several marine hospitals.

From the above statistics I am led to conclude:

1. That buboes are probably caused by the absorption of chemical poisons, the result of the action of the micro-organisms in the chancroid, and not to the entrance of the micro-organisms themselves into the lymphatics.

2. That the benzoate of mercury yields such satisfactory results that it should be employed in the treatment of non-suppurating buboes, and excision reserved for those cases in which benzoate has failed.

3. The injection of iodoform-ointment should be used in the treatment of all freely suppurating buboes, since statistics show that it yields much more satisfactory results than the other methods of treatment applicable to this variety.

4. Incision and curettement should be used in a few cases in which the skin has been destroyed and the ulcer presents an unhealthy granulating surface.

5. Excision should be reserved for cases that have not yielded to other treatment, and for those in which there are several foci of suppuration.